

REMARKS

The Examiner rejected claims 1-20 under 35 U.S.C. §103(a) as allegedly being unpatentable over Iwasa *et al.* (JP 2000-63433 and its Chemical Abstract (132:187644), and its machine-assisted English translation provided by Japan Patent Office) in view of Iwasa *et al.* (6,074,801).

Applicants respectfully traverse the §103(a) rejections with the following arguments.

35 U.S.C. §103(a)

The Examiner rejected claims 1-20 under 35 U.S.C. §103(a) as allegedly being unpatentable over Iwasa *et al.* (JP 2000-63433 and its Chemical Abstract (132:187644), and its machine-assisted English translation provided by Japan Patent Office) (hereinafter, Iwasa JP'433) in view of Iwasa *et al.* (6,074,801) (hereinafter, Iwasa '801).

Applicants respectfully contend that claims 1 and 13 are not unpatentable over Iwasa JP'433 in view of Iwasa '801, because Iwasa JP'433 in view of Iwasa '801 does not teach or suggest each and every feature of claim 1. For example, Iwasa JP'433 in view of Iwasa '801 does not teach or suggest the recited multihydroxy-containing additive of claims 1 and 13.

The Examiner acknowledges that Iwasa JP'433 does not teach the recited multihydroxy-containing additive of claims 1 and 13.

The Examiner argues: "Iwasa'801 teaches (col.18, lines 4-26) that when his negative photoresist composition contains polyhydric alcohol, resolution can be improved because *the polyhydric alcohol has high reactivity with the crosslinker (which has the functional group of*



so that the polyhydric alcohol acts as an accelerator of bridging. As one of the examples for such polyhydric alcohol compound, Iwasa'801 discloses 1,4-cyclohexanediol.

Since Iwasa (JP'433)'s polymer shown above also contains the functional group of -C(=O)-NH-CH₂-O-R⁶, and since Iwasa's composition is also negative-working, it would have been obvious to one of ordinary skill in the art to add a polyhydric alcohol compound such as 1,4-

cyclohexanediol into Iwasa's composition in order to improve resolution as taught by Iwasa'801 (and, Iwasa (JP'433)'s polymer containing the functional group of $-C(=O)-NH-CH_2-O-R^6$ would chemically react with the 1,4cyclohexanediol as taught by Iwasa'801). Therefore, Iwasa (JP'433) in view of Iwasa'801 would render obvious present inventions of claims 1-6."

In response, Applicants note that Iwasa '801 recites on col. 18, lines 4-9: "Also, when the negative type photoresist composition of the present invention contains polyhydric alcohol (alcohol with equal to or more than 2 valences), resolution can be sometimes improved. This is because the polyhydric alcohol has high reactivity with the crosslinker so that the polyhydric alcohol acts as an accelerator of bridging" (emphasis added).

Applicants respectfully contend that the Examiner has not cited sufficient evidence to demonstrate that the addition of polyhydric alcohol into the composition of Iwasa JP'433 would improve resolution as is accomplished in Iwasa '801. The crosslinking reaction in Iwasa '801 is between a polymer containing a carboxylic acid group and the small molecule crosslinker (as noted by the Examiner), which is not a very efficient reaction and this reaction is therefore amenable to being accelerated (in bridging) by the addition of polyhydric alcohol. In contrast, the crosslinking reaction in Iwasa JP'433 is directly between polymers and is therefore much more efficient than the crosslinking reaction in Iwasa '801. Therefore, the crosslinking reaction in Iwasa JP'433, being much more efficient than the crosslinking reaction in Iwasa '801, has no demonstrated need for an acceleration of bridging.

The Examiner's argument that the polymer in Iwasa JP'433 and the small molecule in Iwasa '801 comprise the same functional group ignores the different crosslinking reaction dynamics in Iwasa JP'433 and Iwasa '801, and is therefore not persuasive. As noted *supra*, the cross linking

reaction directly between polymers as in (Iwasa JP'433) is much different than the cross linking reaction between a polymer and a small molecule crosslinker (as in Iwasa '801).

In addition, the Examiner has not provided any evidence demonstrating that the addition of polyhydric alcohol into the composition of Iwasa JP'433 would not have adverse effects.

Moreover, Applicants note that Iwasa JP'433 and Iwasa '801 were filed at about the same time (i.e., both filed in August 1998) and have the common inventor of Shigeyuki Iwasa. By being an inventor of Iwasa '801, Shigeyuki Iwasa would have known whether or not the addition of polyhydric alcohol into the composition of Iwasa JP'433 would be beneficial. The fact that Shigeyuki Iwasa did not recite the addition of polyhydric alcohol into the composition of Iwasa JP'433 is evidence that the addition of polyhydric alcohol into the composition of Iwasa JP'433 is not beneficial and therefore not obvious. Applicants respectfully contend that, since it was not obvious to the common inventor (Shigeyuki Iwasa) in Iwasa JP'433 and Iwasa '801 to add polyhydric alcohol into the composition of Iwasa JP'433, it most certainly would not have been obvious to a person of ordinary skill in the art to add polyhydric alcohol into the composition of Iwasa JP'433.

Based on the preceding arguments, Applicants respectfully maintain that claims 1 and 13 are not unpatentable over JP'433 in view of Iwasa '801, and that claims 1 and 13 are in condition for allowance. Since claims 2-12 depend from claim 1, Applicants contend that claims 2-12 are likewise in condition for allowance. Since claims 14-20 depend from claim 13, Applicants contend that claims 14-20 are likewise in condition for allowance.

In addition, Applicants respectfully contend that amended claim 6 and new claim 21 are

not unpatentable over JP'433 in view of Iwasa '801, because JP'433 in view of Iwasa '801 does not teach or suggest the feature: "wherein the second monomer comprises one of a fluorosulfonamide and a fluoroalcohol".

CONCLUSION

Based on the preceding arguments, Applicant respectfully believes that all pending claims and the entire application meet the acceptance criteria for allowance and therefore request favorable action. If the Examiner believes that anything further would be helpful to place the application in better condition for allowance, Applicant invites the Examiner to contact Applicant's representative at the telephone number listed below. The Director is hereby authorized to charge and/or credit Deposit Account No. 09-0458.

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